

Having described the invention, we claim:

1. A control system for a material handling system, said control system having a first control module, a second control module, and a third control module, said first control module comprising:

a first control cabinet for providing primary control to said first control module and said control system;

a first external component for controlling an equipment component of the material handling system;

a modular interconnectivity component for interconnecting said first control cabinet and said first external component for control of said first external component by said first control cabinet;

a first internal component for operating said first control cabinet, said first internal component being disposed within said first control cabinet; and

a modular interconnectivity component for interconnecting said first control cabinet and said first internal external component for communication between said first internal component and said first control cabinet,

said first control module having primary control of said second control module and said third control module, said first control module being

interconnectable and interoperable with said second control module and said third control module such that said second control module may assume operational control of said third control module in the event that said first control module is removed from said control system.

2. The control system as set forth in claim 1 wherein said second control module comprises:

a second control cabinet for providing primary control to said second control module and said third control module;

a second external component for controlling an equipment component of the material handling system; and

a modular interconnectivity component for interconnecting said second control cabinet and said second external component for control of said second external component by said second control cabinet.

3. The control system as set forth in claim 1 further including an existing control system interconnected with said first control module.

4. The control system as set forth in claim 1 wherein said first control module dictates primary control of said control system, said second control

module dictates primary control of a subsystem of said control system, and the third control module dictates primary control of a part of said subsystem.

5. The control system as set forth in claim 4 wherein the control of said second control module is subservient to the control of said first control module.

6. The control system as set forth in claim 5 wherein the control of said third control module is subservient to the control of said second control module.

7. The control system as set forth in claim 2 wherein said second control module is capable of assuming primary control of said control system if the first control module is removed from said control system.

8. The control system as set forth in claim 1 wherein said third control module comprises:

a third control cabinet for providing primary control to said third control module,

a third external component for controlling an equipment component of the material handling system; and

a modular interconnectivity component for interconnecting said third control cabinet and said third

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9. The control system as set forth in claim 1 wherein said first control module further includes a second external component for controlling an equipment component of the material handling system.

11. A method for controlling a material handling system, said method comprising the steps of:

providing a predetermined quantity of control modules for controlling respective parts of the material handling system;

adding an additional control module to the control system architecture for controlling the

additional part of the material handling system and interfacing with the predetermined quantity of control modules, said step of adding the additional control module including the inputting of rudimentary data to the control system.

12. The method as set forth in claim 11 further comprising the steps of:

removing a part of the material handling system for decreasing the capacity of the material handling system;

removing the control module responsible for controlling the part of the material handling system; and

inputting rudimentary data to remove the control module from the control system architecture.

13. The method as set forth in claim 11 wherein each of the control modules include a control cabinet, an external component for controlling an equipment component of the material handling system, and a modular interconnectivity component for interconnecting the control cabinet and the external component for control of the external component by the control cabinet.

14. The method as set forth in claim 13 further including the steps of:

controlling the entire control system by means of a first control module;

controlling a subsystem of the control system by means of a second control module subservient to the first control module; and

controlling a part of the subsystem by means of a third control module subservient to the second control module.

15. An apparatus for controlling a material handling system, said apparatus comprising:

a first means for controlling said apparatus, said first means comprising a cell coordination cabinet, an associated external component, and a modular interconnectivity component; and

a second means for controlling a part of said apparatus, said second means comprising a main control cabinet, an associated external component, and a modular interconnectivity component,

said second means assuming control of said apparatus in the event said first means is removed from said apparatus.

